

QUASI ORTHOGONAL HYBRID WALSH-PN
CODES FOR CDMA APPLICATION IN HF MODEMS

ABSTRACT OF THE DISCLOSURE

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HF modems operate at the HF licensed frequency bands ranging from 3 to 25
MHz. This invention deals with a Quasi CDMA application of a low bit rate modem
operating at a rate of 125 bps. This low rate modem has been operational for some time
10 now, and is based on the MIL-STD 188-110A waveforms.

The modulator of the low bit rate modem processes the information data at the
mobile transmitter before it sends the HF angle modulated carrier to one of the remote
base station (RBS) sites, where the information is processed and demodulated and
forwarded to the Network Operation Center (NOC).

15 The modulated waveform generated by the HF transmitter consists of a
preamble, data spreading by Walsh functions, Walsh scrambling by a Pseudo-Noise
(PN) sequence, channel symbol formation, and the Direct Digital synthesizer
implementing an 8 Phase Shift Keying (8PSK) to 8- Ary Continuous Phase Frequency
Shift Keying (CPFSK) signaling converter. The HF modem transmits a 4 second HF
20 burst at the allowed HF frequency. This burst is made up of four 32 channel symbol
frames for the preamble and 5 repeated constant duration HF blocks.